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ABSTRACT

We test several hypotheses regarding the relationship between ownership structure and corporate performance. Our findings support the proposition that equity ownership by financial institutions in Japan may effectively substitute for the missing external takeover market by resulting in monitoring and intervention which minimizes the danger of lapses in productivity. In contrast, we also find evidence that high levels of intercorporate shareholding insulate firms from their own problems, at the expense of firm performance. Further, we find a notable positive influence of insider ownership, but see no evidence that the influence of financial institutions has diminished in the globalization and prosperity of the 1980s.

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Various mechanisms exist to halt, reverse, and even prevent the lapses from efficient behavior that can strike a firm at random, as well as emerge from the conflicting interests of firm constituents. Among these mechanisms, an increasingly visible and effective force is the external takeover.[1] If the threat of takeover does not induce managers to react quickly and effectively to such lapses, the takeover itself can induce necessary corrections. In Japan, however, takeovers are rare,[2] primarily due to an extensive array of corporate cross shareholding which developed with the express aim of deterring external takeovers. Nevertheless, other mechanisms have evolved within the Japanese corporate ownership structure to repair and reduce the severity of such bouts of inefficiency.

As Hirschman details, the response of shareholders to such inefficiency can take the form of both exit and voice,[3] and we aim here in particular to measure the influence of the different "voices" expressed by

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[1]see Lichtenberg, Frank R., Corporate Takeovers and Productivity, MIT Press, 1992.

[2]Between 1988 and 1990, the merger rate was .3% in Japan, vs. 7.8% in the U.S., according to the Global Vantage Industrial/Commercial data file.

[3]Hirschman, Albert O., Exit, Voice, and Loyalty: Responses to Declines in Firms, Organizations, and States, Harvard Press, 1970.

financial institutional and corporate shareholders. We test several hypotheses here regarding the relationship between ownership structure and corporate performance using a panel of Japanese firm-level data over the period from 1976-1989.

Our findings support the proposition that equity ownership by financial institutions in Japan may effectively substitute for the missing takeover market by resulting in monitoring and intervention which minimizes the damage of these random and other lapses. We present evidence of this responsiveness by focusing on the lower tail of the productivity and profit distributions, and we find almost a truncation of these poor states in firms with a large ownership share by financial institutions. In contrast, we also find evidence that high levels of intercorporate shareholding insulate firms from their own problems, at the expense of firm performance. Further, we find an important influence of insider ownership, but see no evidence that the influence of financial institutions has diminished in the globalization and prosperity of the 1980s.

These results have important implications for understanding Japanese economic behavior, ownership structure in general, and the consequences of restrictions on ownership structure and ownership change. We first discuss theories of ownership influence and unique features of Japanese ownership structure, and then summarize existing empirical evidence. The following section explains our data and methodology, and we then relate our findings and briefly discuss their implications.

Ownership Theory and Japanese Ownership Characteristics

Imperfect information and the separation of ownership and control introduce numerous potential agency conflicts. Particularly in Japan, the influence of ownership structure on firm performance represents a multiple-principle agent problem, with potential conflicts between management and shareholders, shareholders and debtholders, management and employees, and among individual, corporate, and financial institutional shareholders.

Probably the most studied of these conflicts is that between shareholders in general (principals) and management (agents). This particular divergence of interests can be a function of both management shareholding and ownership diffuseness. Berle and Means focused on this diffusion in their seminal work of 1932.

> Those who control the destinies of the typical modern corporation own so insignificant a fraction of the company's stock that the returns from running the corporation profitably accrue to them in only a very minor degree. The stockholders, on the other hand, to whom the profits of the corporation go cannot be motivated by those profits to a more efficient use of the property, since they have surrendered all disposition of it to those in control of the enterprise.[4]

Berle and Means' thesis implies a sacrifice of the efficient use of resources associated with profit maximization, as ownership diffusion reduces incentives for managers to maximize profits. Nevertheless, various mechanisms

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[4]Berle, Adolf A., and Means, Gardiner C., The Modern Corporation and Private Property, 1932, p. 9.

offer at least partial solutions to the problems of monitoring firm behavior and maintaining or restoring efficiency.

In the case of Japan, the major principals are financial institutions and other corporations (Table 1), and the former often hold debt as well as equity. Firms affiliated with financial "keiretsu" groups typically show a large ownership share by financial institutions, and/or a high level of inter-corporate shareholding among business group members. These affiliated firms represent about 61 percent of the market capitalization of the Tokyo Stock Exchange.[5] While the shares of financial institutions and other corporations vary considerably across firms, Nakatani (1984) finds that the average levels of financial institution and corporate shareholding are similar among group affiliated and independent firms. Subsidiary firms do show lower institutional shareholding and higher corporate ownership shares on average, however.

Gerlach (1992) proposes an underlying structure of share ownership that is shaped by a "logic of intercorporate, strategic interests," where investors are concerned with a more complex set of goals than capital market returns.

> Unidirectional relationships based on simple flows of equity capital have been replaced by reciprocal relationships based in complex flows of trade in capital, goods, and personnel...The seemingly crisp categories of principal and agent become fuzzy as the managers of one firm become the

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[5]Shale, Tony, "Reawakening the Sleeping Giant," Euromoney, November 1990, p. 16.

> owners of another, and in turn are held by managers of that firm. It is less that management has been separated from control, therefore, than that control has been merged into management.[6]

He finds that ownership is dominated by firm's trading partners and affiliated companies and that these "alliance patterns" are not limited to formal keiretsu groupings.

Kester (1991) argues that the Japanese corporate governance system has obviated the need for an external corporate control market.

> It (Japan) has not needed such a market because of the efficiency with which the traditional Japanese corporate governance system has dealt with the trading hazards of the marketplace and the agency problems of large organizations.[7]

Sheard (1989) also contends that the combination of main bank monitoring and interlocking shareholding effectively substitute for the "missing" external takeover market in Japan.

The role of the main bank is considered particularly important. Each bank can hold a maximum of 5% of firm equity by law (reduced from 10% as of the end of 1987), but on average, within our sample, financial institutions held about 25% of all equity. There is typically one main bank that is responsible for monitoring the firm's business affairs and intervening in times of crisis.

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[6]Gerlach, Michael, Alliance Patterns and the Social Organization of Japanese Business, forthcoming, Berkeley, University of California Press.

[7]Kester, W. Carl, Japanese takeovers: the global contest for corporate control, Harvard Press, 1991, p. 271.

> the potential threat of bank takeover may play an important monitoring function when the financial system is viewed as a whole...one cannot deny that in Japanese practice there is a close positive relationship between the degrees of management freedom from bank control and the level of corporate profits[8]

Nevertheless, in normal circumstances the main bank does not exercise explicit control over corporate policy or management selection.[9]

In contrast to the active reputation of institutional shareholders, Japanese corporate cross-shareholding relies on a premise of inactivity, leaving management unconstrained.

> Since interlocking corporate stockholding has developed to such a degree that the takeover of the J-firm through open bids is virtually impossible, management of the J-firm is free from the discipline exercised by stockholders through the stock market.[10]

While this management freedom can enable improved long-range planning, it may also insulate management from positive external influences by keeping control in the hands of "friendly" fellow business group members.

The size of these institutional and corporate principals, as well as the observed influence of the former, thus suggests the following hypotheses:

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[8]Aoki, Masahiko, "Toward an Economic Model of the Japanese Firm,"Journal of Economic Literature, 28, March 1990, pp. 14-15.

[9]Ibid., pp. 15-16.

[10]Aoki, Masahiko, Information, Incentives, and Bargaining in the Japanese Economy, Cambridge University Press, 1988, p. 143.

H1) The greater the share of equity owned by financial institutions, the greater their incentive to monitor firm performance and intervene when necessary, thus reducing the incidence and severity of lapses from efficient behavior.

H2) A high level of intercorporate shareholding of a firm's equity insulates management from outside influence and thus reduces the ability of the firm to respond to inefficiencies.

While a negative relationship between performance and the level of intercorporate shareholding would appear to support this latter hypothesis, it could also reflect the ability of corporate owners to support non-profit-maximizing objectives.

Either of these influences may be reinforced by the large aggregate holdings of individuals, who have no effective voice in the corporate governance structure according to Aoki.[11] While a large blockholder may be more likely to use voice rather than exit due to his potential influence over share prices, one would expect small shareholders to express their dissatisfaction through exit since they are too small to have an effective voice or affect the price of shares. If individuals do exit effectively, we might observe a positive relationship between their aggregate holdings and performance, but if they exit only rarely or ineffectively, they may reinforce either intercorporate or institutional influences. We thus test the hypothesis that the influence of individuals is a function of their effective voice:

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[11]Aoki, 1988, p. 142.

H3) The proportion of equity held by individuals does not influence firm performance.

In regards to equity ownership by management, the model of Jensen and Meckling (1976) supports a convergence-of-interests theory in which the market value of the firm increases with management ownership, as managers bear a greater share of the cost of deviating from profit maximization and are thus less likely to squander. Later work by Fama and Jensen (1983) suggests offsetting costs of significant management ownership, however, as management ownership can provide entrenchment from displacement and may encourage some non-profit-maximizing behavior. One particular problem is that a large ownership stake may also lead to more risk-averse behavior by management. There is also an important question of causality here because managers may use inside information to invest in their own firms only when they expect above average performance. While average levels of insider ownership are much lower in Japan than in the U.S. (6 percent in our sample vs. 10.6 percent for a sample of Fortune 500 firms[12]) the following hypothesis has universal implications:

H4) A moderate level of insider shareholding can induce a convergence of interests between management and shareholders, but a high insider share may result in inefficient behavior by management.

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[12]Morck, Randall, Schleifer, Andrei, and Vishny, Robert, "Management Ownership and Market Valuation: An Empirical Analysis," Journal of FinancialEconomics, 20, 1988, pp. 293-315.

Finally, Kester (1991) argues that with the globalization of financial markets and the high level of recent profits, Japanese corporations have become less dependent on financial institutions for capital, thus reducing the ability and incentive of these shareholders to monitor and influence performance[13]. This leads to our final hypothesis:

H5) The influence of financial institutions has diminished in the globalization and prosperity of the 1980s.

The rejection of this hypothesis, however, implies that an active role by financial institutions can offer a long-lasting solution to potential agency problems between management and shareholders which is not vulnerable to good or bad performance states.

As we test these hypotheses, we observe not only the effectiveness of different shareholders in maintaining and restoring efficiency, but also the potential implications of the absence of the takeover mechanism. While ownership structure has an obvious impact on the likelihood of a change in corporate control, we aim here to show that ownership composition can also have a primary influence on the need for such changes.

Existing Evidence

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[13]Kester, p. 271.

Empirical analysis of the influence of Japanese ownership structure has primarily focused on business group affiliations. Caves and Uekusa (1976), Nakatani (1984), and Genay (1991) all find significantly lower profitability among group affiliated firms. Nakatani also observes slower output growth and more stable performance among these firms, and Caves and Uekusa find that profits are also negatively related to the share of equity held by group affiliates. Gerlach (1992) also confirms this negative difference, but finds that it goes away with the inclusion of a measure of industry dominance.[14] Due to the simple focus in these studies on group affiliations, however, one cannot distinguish between the separate financial and inter-corporate ownership effects, either or both of which may both be present in the group firm.

On the subject of ownership diffusion, Cable and Yasuki (1985) find that the concentration of shareholders outside the business group has a significant positive effect on profitability, but that concentration within the group doesn't matter.

Evidence of a positive bank role does exist, however. Suzuki and Wright (1985) find that the likelihood of rescue from bankruptcy is positively related to the equity share of the firm's main bank. Hoshi et al. (1990) also find a positive bank influence, relaxing liquidity constraints by lessening information and incentive problems in the capital market in times of financial distress. Gerlach also observes a significant positive relationship between

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[14]Gerlach, p. 248.

profit and the percentage of borrowed capital that comes from the leading lender.

In regards to the influence of insider ownership, we are not familiar with any evidence from Japan, but the study of Morck et al. (1988) of U.S. firms found a positive influence on profits and Tobin's Q from increases in insider ownership in the 0-5% range, and a negative influence in the 5-25% ownership range.

Our study relies on an expanded and updated sample from the same data source as Nakatani and looks specifically at variations in the level of intercorporate shareholding and in the ownership share of financial institutions, as well as ownership concentration, and the directors' ownership stake, in order to explain differences in productivity and profitability among Japanese firms. We are especially interested in observing the separate influences of corporate and financial shareholding on the ability of firms to respond to lapses from efficient behavior, but also hope to provide evidence of how ownership influences performance in general, perhaps by affecting conflicts over risk vs. return in investment choices. We also test for changes in these relationships over time.

Data and Methodology

This analysis is based on financial statements and ownership data of Japanese parent firms over the period from 1976 to 1989 provided by Nihon

Keizai Shimbun. This Nikkei database contains firm level accounting data as well as the equity shares held by financial institutions, other corporations, individuals, securities brokers, foreign parties, investment trusts, and by government agencies and public organizations. Investment trusts, also known as "tokkin" funds, developed from the 1980 corporate tax code revision to allow insurance companies to resell newly purchased shares without a large tax consequence. Effective as of 1984, these funds enabled the pursuit of short-term capital appreciation objectives by institutions with stable long-term positions. We also have a measure of ownership concentration in the form of the shares held by the top ten stockholders.

Since 1949, individual shareholding has declined steadily, while the shareholding by financial institutions and corporations have both increased more than fourfold.[15] Over the period of our sample, we observe that ownership by financial institutions rises from an average of 22% in 1975 to 30% in 1989, while average corporate ownership seems very stable throughout the period and individual ownership declines from an average of 43% to 30%. The shares held by directors, a subset of individual shareholding, also declines throughout the period, from an average of 8% to less than 5%. Our measure of ownership concentration, the fraction of shares held by the top ten shareholders, appears stable over the period with an average of about 50%.

Our sample consists of 1241 manufacturing firms with average total sales of over 90 billion yen, representing about 40 percent of total sales by

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[15]Aoki, 1988, p. 117.

Japanese manufacturers.[16] While our sample selection is biased toward the largest Japanese firms, we have no reason to suspect that this selection biases our estimates of ownership effects, although our results do not necessarily extend to small firms outside the range of our data. We also restrict our sample to firms which report their accounting data for twelve month periods.

We measure corporate performance here in terms the level of total factor productivity (TFP) as well as the return on assets. These variables are correlated, but productivity appears to have a causal effect on profitability. TFP is a well accepted measure of technical efficiency and thus a key determinant of growth and the standard of living.[17]

Our methodology for analyzing the relationship between ownership structure and productivity follows a two-step procedure in which we calculate productivity residuals based on the estimation of a separate production function for each industry, and we then regress these measures of relative productivity on ownership shares.

This productivity estimation follows the methodology of Lichtenberg and Siegel (1992) in their examination of the effects of leveraged buyouts on productivity. TFP is basically a measure of output per unit of total input.

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[16]OECD, Non-Financial Enterprises Financial Statements, 1983, pp. 84-84, and 1990, pp. 112-113.

[17]see Baily, Martin N., and Shultze, Charles L., "The Productivity of Capital in a Period of Slower Growth," Brookings Papers on Economic Activity, 1990, pp. 369-406; and Solow, Robert M., "Technical Change and the Aggregate Production Function," Review of Economics and Statistics, 39, 1957, pp. 214-231.

The ratio of real output to real inputs provides a productivity measure that is independent of the price level. In order to account for the variety of inputs in the manufacturing process, we divide total output by a weighted index of capital, labor, and material inputs:

$$e = Q / T(k,l,m)$$

where e is the total factor productivity level, k is the capital input, l is labor input, and m is the material input. This can be rearranged into a production function where output is the product of productivity and a function of inputs. If we assume that the functional form is Cobb-Douglas, the geometrically weighted sum of inputs, then the production function becomes

$$Q = e * l^a * k^b * m^g$$

Taking the logarithm of both sides, we get

$$\ln(Q) = \ln(e) + a*\ln(l) + b*\ln(k) + g*\ln(m)$$

We can then use this linear, first-order approximation of the production function to infer the unobservable TFP level if we assume that the technical parameters a, b, & g are invariant across firms within the same industry, and that the regression residuals are uncorrelated with the input quantity regressors. We use the residuals of OLS estimates done individually for each NEEDS industry code to infer the level of TFP as the deviation in firm productivity from the industry mean. We also include in these production function regressions the ratio of selling, general, and administrative expenses to total costs in order to control for sales intensive firms, and fixed effect

year dummy variables to account for growth in productivity over time. Thus our productivity model is

$$\ln(Q_{ijt}) = a_i \ln(L_{ijt}) + b_i \ln(K_{ijt}) + c_i \ln(M_{ijt}) + d_i SGA_{ijt} + e_{it} + u_{ijt}$$

where i represents the industry, j represents the firm, t represents the year, and the disturbance term u is our TFP measure.

We only have data for nominal inputs and output, however, and if input and product markets are not perfectly competitive than the use of this nominal data may bias our TFP estimates. In the case of our output measure, the sales of finished goods, for example, the above residuals will reflect both efficiency and price variation if the market is imperfectly competitive. If the firm's ability and desire to take advantage of market power is correlated with its ownership structure, then our estimates of the impact of ownership structure on productivity will be biased. While there is a large body of evidence on the impact of market share and concentration on the ability of firms to exploit market power, we concentrate here on ownership patterns within the firm and not within the market. There is no clear link between this intrafirm ownership structure and market power, although we do provide some evidence here of the impact of firm ownership structure on profitability.

For our input data, we rely on the number of employees and nominal figures for raw materials costs and for total depreciable tangible fixed assets. Again we are alert to potential biases in our estimates due to imperfectly competitive markets for the latter inputs. If the markets for capital, capital

assets, and material inputs are not perfectly competitive and increased ownership by material and capital suppliers allows for the procurement of these inputs on more favorable terms, then our estimates of the productivity impact from ownership concentration may be overstated, but there is an additional efficiency gain in this case from the decrease in input costs toward their marginal cost.

We first regress our TFP residuals on our measures of ownership composition, and then group these residuals by ownership share and other firm characteristics to better understand the distributional impacts of these characteristics. We hope here to distinguish between general effects on firm performance, perhaps through monitoring and influence over investment policy, and any truncation of the lower tail of the distribution through better response to inefficient lapses.

To focus on these distributional effects, we rely on differences in the coefficient of skewness which is calculated from the third moment about the mean. This measure of asymmetry is zero for a symmetric distribution, negative if the lower tail is more extended, and positive if the distribution is "skewed" to the right of the mean, as in the case of a distribution where the lower tail is truncated. If the sample is drawn from a normal population, then the skewness coefficient is approximately normally distributed with a mean of zero and a standard deviation of the square root of (6/n).[18] A

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[18]Cochran, William G., and Snedecor, George W., Statistical Methods, Iowa State University Press, 6th ed., 1980, pp. 78-79.

truncation of the lower tail should also be reflected in a more positive difference between the mean and the median.

We also look at the return on assets ((net income before taxes + interest payments)/tangible fixed assets) for an additional perspective on ownership impacts. To remove unique industry and year effects, we adjust this measure by subtracting the mean return among firms in the same industry in the same year. We believe that our analysis of total factor productivity levels best reveals the efficiency and welfare impacts of ownership composition, but that profitability also provides important information, particularly by reflecting benefits to shareholders. We do exclude from our profitability sample those outliers where the return on assets is less than -1 or greater than 1.

While excess profits can reflect the exercise of market power, any effects of ownership on market power should benefit all firms in an industry, and since our profit measure is adjusted for relative industry performance, a positive relationship between ownership and profits does not necessarily indicate noncompetitive behavior. Any increased profitability seems more likely to result from lower costs, perhaps through greater efficiency, and not reflect monopoly power or pricing.

Analysis of Productivity Effects

Looking at the correlations among our performance measures and ownership shares (Table 2), we see that ownership levels of financial institu-

tions are positively correlated with the level of TFP and profits, while corporate ownership is negatively correlated with the same measures. Among our measures of ownership composition, we see strong negative correlations between corporate share-holding levels and individual and financial institution shareholding. Director shareholding is negatively correlated with institutional and corporate shareholdings and positively correlated with profits. In all, these relationships appear to offer at least rough support for the hypotheses we advanced earlier.

Using Nakatani's listing of group affiliations, we also corroborate the negative group affiliation effect found by him and others, but the correlation between this affiliation and productivity is insignificantly positive, and we also see that such group affiliation shows a stronger positive correlation with corporate shareholding than with institutional ownership.

Regressing our total factor productivity residuals (resulting from the estimation of individual production functions by industry) on financial and corporate ownership share levels, we observe a strong impact of ownership composition on this primary measure of corporate performance (Table 3). We find a significant positive relationship between the ownership by financial institutions and the level of productivity, and large negative effects associated with corporate and individual ownership (col. 1). Our estimates suggest that a complete transfer (100%) of ownership from individuals to financial institutions would increase productivity by 13 percent, while a similar transfer to corporate ownership would reduce productivity by 4 percent. Thus we find

evidence consistent with the hypotheses that intercorporate ownership arrangements can insulate managers from external influence at the expense of productivity, and that financial institutions exert a positive influence in line with their larger role of monitoring and occasional intervention. The marginal impact of individual ownership suggests an inactive role at best.

The inclusion of the numerous "minority" ownership shares (col. 2) suggests several interesting influences, but we are much less confident in these relationships due to small shares which are involved. We do note that the effect of trust or "tokkin" ownership by financial institutions is consistent with the influence of their general "long-term" holdings. The intercept term here reflects the individual ownership term which we omit in this equation, and again suggests a non-positive individual influence.

Substituting the directors' ownership share for the individual share in our first regression, we observe (col. 3) a positive influence on productivity. While much smaller than the positive effect of institutional ownership, this insider influence is significant at the 10% significance level and supports a convergence of interests hypotheses.

The strong negative coefficient associated with the top ten shareholdings implies a positive effect from ownership diffusion (col. 4), but this proxy for concentration is not an ideal measure and may not fairly represent the control implications of Japanese ownership structure. This measure of concentration is also highly correlated with the level of corporate ownership, and this apparent negative concentration effect may really just represent again

the negative influence of corporate ownership. Nevertheless, these results do not support Berle and Means or Cable and Yasuki.

Looking for a general change in these ownership effects over time, particularly in the newly global economy of the late 1980s, we divide our sample into three groups, representing observations from 1976-1980, 1981-1985, and 1986-1989 (Table 4).[19] We find here that the effects of financial institution shareholding seem to grow much stronger in the globalization of the 1980s, which appears to sharply contradict Kester's assertion that financial institutions have lost much of their influence. Kester also suggests, however, that banks may have shifted from a volume orientation to a greater focus on their investment return. Moreover, while successful firms may have chosen to reduce their dependence for financing on financial institutions, the financial institutions have probably retained their large equity positions, especially because of tax incentives, and so the influence of financial institutions need not have disappeared.

While a positive influence of financial institutions already seems clear, this influence may be the result of a positive shift in productivity from monitoring and improved investment policy, or could follow from successful response and intervention to lapses from efficient behavior. While these effects are not mutually exclusive, the latter "truncation" effect should be reflected in a greater value of the skewness coefficient or a larger difference

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[19]note that the calculation of our productivity residuals already controls for individual year effects.

between the mean and median. To better understand the distributional effects of ownership structure, we group firms by their financial institution ownership (low - 0-15%, medium - 15-30%, high - over 30%), and then examine the frequency distributions within these groups (Table 5).

We observe that firms with medium and high financial institutional ownership have a higher mean productivity and show less variation. Moreover, we see evidence of effective assistance by financial institutions in their responses to lapses in firm behavior, as the skewness coefficient and difference between the mean and median increase sharply with medium and high financial institution ownership. While the distribution of residuals is significantly skewed to the left for firms with low financial ownership, it is significantly skewed to the right for firms with financial ownership shares above 15 percent. Thus at least part of the explanation for the improved performance of firms under the influence of financial institutions appears to lie in their success in dealing with inefficiencies, as evidenced by the roughly truncated lower tail of the productivity distribution of these firms.

In order to examine the effectiveness of other institutions and mechanisms in maintaining and restoring efficiency, we also try several other groupings. In regards to the hypothesis that corporate cross-ownership insulates management from efficient outside influences, we try separating firms by high (over 25%) and low corporate ownership as well as by financial institution ownership (Table 6). When we look at both financial institution and corporate ownership together, it appears that high institutional

ownership is most influential when unencumbered by corporate shareholding, and that corporate shareholding is most damaging in the absence of a large institutional share. Overall, this distributional analysis supports our regression findings and again suggests that financial institutions respond much better than corporations to trouble within the firms they own shares in.

Grouping firms by directors' ownership shares (Table 7), we see a rough positive influence which is consistent with the above regression analysis, but we also observe some unique effects associated with high and low insider ownership. As insider ownership moves into the range of .25 to 1 percent, we observe a negative shift in the distribution of productivity, and firms with high insider ownership (above 15%) appear no more efficient than those in the 5 to 15 percent range. We also see abnormally low within-firm variance in productivity among firms in the .25 to 5 percent range which is consistent with risk-averse behavior. Thus while increasing inside ownership in the 1 to 15 percent range appears to improve productivity in line with a convergence of interests hypothesis, we also see some evidence which implies that other incentive effects may offset the benefits of converging interests for more extreme levels of inside ownership.

All together, the evidence from this productivity analysis supports most of our initial hypotheses. Increased ownership by financial institutions appears to reduce the incidence and severity of lapses from efficient behavior, whereas the insulating effect of high corporate ownership exacerbates this problem. Individual shareholders clearly do not show an effective presence

or voice, but director ownership does show a generally positive influence. Finally, we see no evidence that the impact of financial institutions on productivity has diminished in the 1980s.

Profit Effects

Our analysis of ownership composition and profitability suggests that most of the above ownership influences on productivity do carry through to the bottom line (Table 8). We focus on the return (net income before taxes + interest payments) on tangible fixed assets, with the mean standardized to zero for each industry and year, and first group firms by the level of financial institutional shareholding. In this case, financial institutional ownership influence again shows a significant positive effect on mean performance, and it also appears to reduce the variance of profits within firms and to truncate the lower tail of the profit distribution. It is certainly clear that financial institutional ownership reduces the frequency of financial distress, as only 1.7% of firms with high financial shareholding have negative profits (net income + interest payments), compared with more than 8% of firms with low financial institutional ownership.

If we group firms again by both corporate and financial institution shareholding, it seems that corporate ownership has a strong negative influence (Table 9), regardless of financial ownership. The influence of financial institutional ownership appears mixed in the absence of high corporate

ownership, but otherwise appears to have a positive influence. In all, corporate shareholding seems to have a strong negative effect on profits, and also appears to reduce the ability of financial institutions to keep profitability from falling too low.

Finally, an analysis of director ownership effects on profitability (Table 10) also suggests a positive influence, in line with theories of converging interests. We also note a particularly strong positive effect here from insider ownership above 15 percent.

In all, our analysis of the distribution of profits is consistent with our productivity findings. Financial institutional ownership clearly helps firms to avoid low profit states, corporate ownership appears to insulate the firm from a competitive level of profits, and director ownership again shows a mainly positive influence.

Summary and Conclusions

Our results suggest that the functional distribution of shareholders does affect corporate performance in Japan. Our analysis of TFP and profitability measures both give a similar picture with regard to ownership composition. The two largest forces among Japanese equity holders, financial institutions and other corporations, appear to have significant positive and negative effects respectively, and director shareholding also shows an important influence.

The benefit of high financial ownership seems consistent with the financial institutions's role within the Japanese economy of monitoring corporate performance and intervening when necessary. In particular, we find that financial institutional ownership reduces both the frequency and severity of lapses from efficiency. High levels of corporate shareholding, on the other hand, do appear to insulate the firm from outside interference, but at the expense of profit and productivity. While it is argued that this stable intercorporate shareholding frees managers to pursue long term strategies without worrying about short term profits, our results linking corporate ownership levels with reduced profit and productivity imply that this insulation adversely affects both near and longer term performance. We cannot rule out the possibility, however, that this negative influence reflects the ability of corporate owners to encourage non-profit-maximizing behavior in their own interests.

Despite the positive influence of financial institutions, our evidence does not imply that the financial business group effectively replaces Japan's missing takeover market in all cases. For keiretsu affiliated firms with high corporate ownership and low institutional ownership, the absence of takeovers or substitute mechanisms is reflected here by relatively poor performance. We also find that director ownership appears to reduce the agency conflict between management and shareholders somewhat. Finally, our evidence only contradicts the hypothesis that the influence of financial institutions has diminished in the 1980s.

While ownership structure in Japan is quite unique, the effects which we observe here have far reaching implications. Our results would seem to favor the elimination of restrictions in the U.S. on the financial ownership of corporate equity, but before we import this reform, we must make sure that our system of deposit insurance does not remove the incentive of financial institutions to monitor and influence corporate performance. This reform may also be unnecessary here due to the more open market for corporate control. On the other hand, we see no reason here to encourage intercorporate shareholding in order to reduce the incidence of takeovers.

Our evidence from Japan suggests that financial equity ownership offers important benefits, particularly in dealing with inefficiencies. All shareholders do not behave alike, however, and corporate performance can clearly suffer from too much insulation from market forces. Both the composition and concentration of equity ownership appear to affect corporate performance in Japan, and further research over the issue of corporate control, theoretically and empirically, must recognize both the size and type of equity shareholders.

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Table 1

Mean Ownership Shares 1976-1989

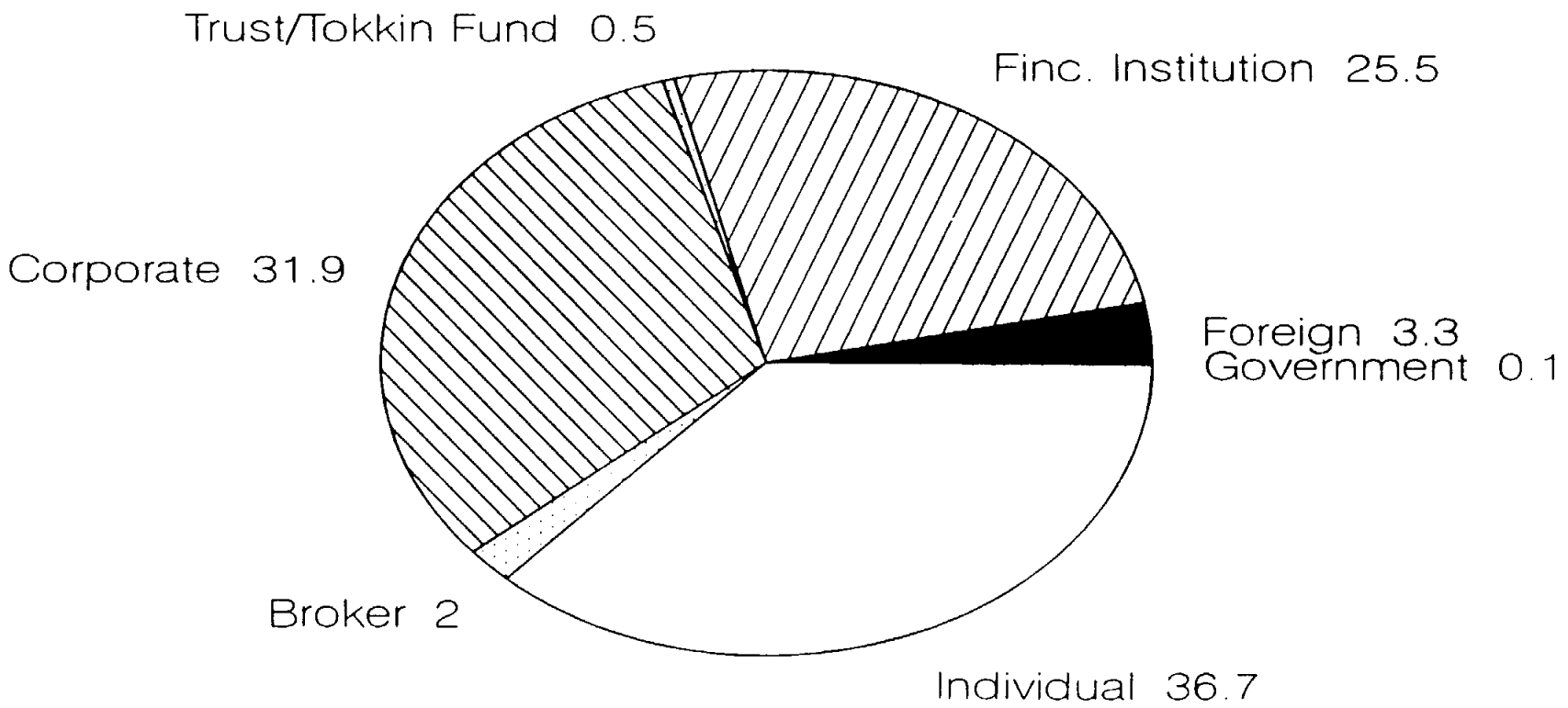

Table 2

Correlation Analysis

	Finc	Corp	Indi	Dir	Resid	Profit	Group
Financial Institution Ownership		-0.56 0.0001 15919	-0.28 0.0001 15919	-0.27 0.0001 15820	0.11 0.0001 15919	0.09 0.0001 14928	0.04 0.0177 3874
Corporate Ownership	-0.56 0.0001 15919		-0.51 0.0001 15935	-0.32 0.0001 15820	-0.09 0.0001 15919	-0.06 0.0001 14928	0.16 0.0001 3874
Individual Ownership	-0.28 0.0001 15919	-0.51 0.0001 15935		0.68 0.0001 15820	-0.01 0.3187 15919	0.03 0.2951 14928	-0.18 0.0001 3874
Director Ownership	-0.27 0.0001 15820	-0.32 0.0001 15820	0.68 0.0001 15820		0.002 0.7672 15804	0.09 0.0001 14699	-0.24 0.0001 3874
Productivity Residual	0.11 0.0001 15919	-0.09 0.0001 15919	-0.01 0.3187 15919	0.002 0.7672 15804		0.2 0.0001 14754	0.01 0.693 3874
Profit	0.09 0.0001 14928	-0.06 0.0001 14928	0.03 0.2951 14928	0.09 0.0001 14699	0.2 0.0001 14754		-0.02 0.1368 3641
Group	0.04 0.0177 3874	0.16 0.0001 3874	-0.18 0.0001 3874	-0.24 0.0001 3874	0.01 0.693 3874	-0.02 0.1368 3641	

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

Table 3

Regression of Productivity Residuals on Ownership Shares

(1976-1989)

Ownership Shares:				
Financial Institutions	0.1 (4.0)	0.12 (8.2)	0.15 (8.2)	
Corporations	-0.07 (-3.6)	-0.05 (-4.1)	-0.04 (-2.8)	
Individuals	-0.03 (-1.5)			
Directors			0.04 (1.7)	
Trust/ Tokkin Funds		0.41 (3.0)		
Brokers		-0.28 (-4.1)		
Government		0.37 (1.1)		
Foreign		0.04 (1.8)		
Top 10 Shareholders				-0.13 (-10.9)
Intercept	0.01 (0.5)	-0.01 (-2.0)	-0.03 (-3.0)	0.07 (10.4)
R-squared	0.012	0.015	0.014	0.008
n	15919	15919	15804	15861

Table 4

Regression of Productivity Residuals on Ownership Shares By Time Period

	1976-1980	1981-1985	1986-1989
Ownership Shares:			
Financial Institutions	0.14 (4.1)	0.05 (1.3)	0.22 (3.8)
Corporations	0.01 (0.2)	-0.12 (-3.6)	-0.04 (-0.8)
Individuals	0.09 (2.8)	-0.08 (-2.5)	-0.05 (-1.1)
Intercept	-0.07 (-2.6)	0.05 (1.7)	-0.04 (-0.8)
R-squared	0.01	0.02	0.03
n	5674	5784	4225

Table 5

Productivity Residuals Grouped by Financial Ownership

Financial Ownership	Low (0-15%)	Medium (15-30%)	High (above 30%)
Productivity			
mean	-0.021 **	-0.014 **	0.028 **
standard deviation	0.26	0.23	0.24
skewness	-0.29	0.62	1.09
	(0.036)	(0.035)	(0.031)
Quantiles			
95%	0.39	0.37	0.44
75%	0.09	0.09	0.13
50%	-0.03	-0.03	0.003
25%	-0.15	-0.13	-0.1
5%	-0.37	-0.34	-0.3
mean-median	0.009	0.015	0.025
n	4727	5014	6178
Within-firm variance (mean)	0.027 *	0.019	0.014 **

standard deviation of skewness coefficient in parenthesis

* - different from remaining sample at 5% significance level

** - different from remaining sample at 1% significance level

Table 6

Productivity Residuals Grouped by Corporate and Financial Ownership

Corporate Ownership	Low (0-25%)	High (above 25%)	Low	High	Low	High
Financial Ownership	Low (0-15%)	Low	Medium (15-30%)	Medium	High (above 30%)	High
Productivity						
mean	-0.009	-0.025 **	-0.012 *	-0.15 **	0.034 **	0.011 *
standard deviation	0.3	0.24	0.26	0.21	0.24	0.21
skewness	-0.54	-0.17	0.7	0.5	1.16	0.77
	(0.075)	(0.040)	(0.056)	(0.044)	(0.037)	(0.061)
Quantiles						
95%	0.43	0.37	0.41	0.31	0.46	0.4
75%	0.14	0.01	0.11	0.08	0.13	0.1
50%	-0.006	-0.035	-0.038	-0.023	0.009	-0.011
25%	-0.16	-0.15	-0.15	-0.12	-0.1	-0.1
5%	-0.43	-0.36	-0.38	-0.31	-0.3	-0.29
mean-median	-0.003	0.01	0.026	0.0008	0.025	0.022
n	1061	3666	1883	3131	4484	1694
Within-firm variance (mean)	0.034 x	0.015	0.025	0.015	0.015 x	0.01 **

standard deviation of skewness coefficient in parenthesis

x - different from remaining sample at 10% significance level

* - different from remaining sample at 5% significance level

** - different from remaining sample at 1% significance level

Table 7

Productivity Residuals Grouped by Insider Ownership

Insider Ownership	0 - .25 %	.25 - 1 %	1 - 5 %	5 - 15 %	Above 15 %
Productivity					
mean	0.004	-0.017 **	-0.004	0.017 **	0.014 *
standard deviation	0.21	0.21	0.24	0.26	0.3
skewness	0.54	-0.88	1.14	1.03	-0.02
	(0.050)	(0.037)	(0.039)	(0.044)	(0.054)
Quantiles					
95%	0.37	0.32	0.41	0.46	0.46
75%	0.1	0.08	0.09	0.13	0.15
50%	-0.011	-0.021	-0.023	-0.009	-0.006
25%	-0.11	-0.13	-0.13	-0.13	-0.14
5%	-0.3	-0.31	-0.34	-0.34	-0.4
mean-median	0.015	0.004	0.019	0.026	0.02
n	2435	4429	3923	3063	2069
Within-firm variance (mean)	0.025	0.015 *	0.015 *	0.025	0.023

standard deviation of skewness coefficient in parenthesis

* - different from remaining sample at 5% significance level

** - different from remaining sample at 1% significance level

Table 8
Return on Assets Grouped by Financial Ownership

Financial Ownership	Low (0-15%)	Medium (15-30%)	High (above 30%)
Profitability			
mean	-0.025 **	0.003	0.017 **
standard deviation	0.24	0.2	0.18
skewness	-0.47	-0.02	0.06
	(0.036)	(0.035)	(0.031)
Quantiles			
95%	0.38	0.36	0.34
75%	0.11	0.11	0.11
50%	-0.029	-0.017	-0.002
25%	-0.15	-0.11	-0.09
5%	-0.4	-0.28	-0.23
mean-median	0.004	0.02	0.019
n	4430	4644	5854
Proportion of firms with negative (net income + interest payments)	8.1%	3.8%	1.7%
Within-firm variance	0.05 **	0.04	0.03 **

standard deviation of skewness coefficient in parenthesis
** - different from remianing sample at 1% significance level

Table 9
Return on Assets Grouped by Corporate and Financial Ownership

Corporate Ownership	Low (0-25%)	High (above 25%)	Low	High	Low	High
Financial Ownership	Low (0-15%)	Low	Medium (15-30%)	Medium	High (above 30%)	High
Profitability						
mean	0.026 **	-0.041 **	0.016 **	-0.005	0.023 **	0.004
standard deviation	0.26	0.23	0.23	0.18	0.18	0.17
skewness	-0.53	-0.52	-0.23	0.16	-0.08	0.45
	(0.075)	(0.040)	(0.056)	(0.044)	(0.037)	(0.061)
Quantiles						
95%	0.44	0.35	0.4	0.32	0.35	0.31
75%	0.19	0.09	0.16	0.09	0.12	0.09
50%	0.034	-0.045	-0.003	-0.022	0.004	-0.015
25%	-0.12	-0.16	-0.12	-0.11	-0.08	-0.09
5%	-0.41	-0.41	-0.31	-0.26	-0.23	-0.24
mean-median	-0.008	0.004	0.019	0.017	0.019	0.019
n	905	3373	1688	2950	4213	1635
Proportion of firms with negative (net income + interest payments)	7.0%	8.7%	4.4%	10.0%	1.6%	2.0%
Within-firm variance	0.04	0.05 **	0.04	0.04	0.03 **	0.02 **

standard deviation of skewness coefficient in parenthesis
** - different from remaining sample at 1% significance level

Table 10
Return on Assets Grouped by Director Ownership

Director Ownership	0 - .25%	.25 - 1%	1 - 5%	5 - 15%	Above 15%
Profitability					
mean	-0.016 **	-0.016 **	0.003	0.011 **	0.037 **
standard deviation	0.2	0.2	0.21	0.22	0.22
skewness	-0.47	-0.52	-0.2	-0.24	-0.01
	(0.050)	(0.037)	(0.039)	(0.044)	(0.054)
Quantiles					
95%	0.32	0.31	0.36	0.38	0.42
75%	0.07	0.08	0.11	0.13	0.18
50%	-0.02	-0.024	-0.008	-0.004	0.025
25%	-0.11	-0.11	-0.11	-0.11	-0.1
5%	-0.31	-0.31	-0.3	-0.3	-0.3
mean-median	0.004	0.008	0.011	0.015	0.012
n	2454	4187	3697	2777	1813
Proportion of firms with negative (net income + interest payments)	0.049715	0.048006	0.040844	0.038531	0.030336
Within-firm variance	0.04	0.04	0.03	0.04	0.03 **

standard deviation of skewness coefficient in parenthesis
** - different from remaining sample at 1% significance level